



ACCELERATING SDG 7 ACHIEVEMENT

# POLICY BRIEF 23

ACHIEVING SDG 7 IN LDCS, LLDCS  
AND SIDS

7 AFFORDABLE AND  
CLEAN ENERGY





# POLICY BRIEF #23

## ACHIEVING SDG 7 IN LDCS, LLDCS AND SIDS

### **Developed by**

Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and the Small Island Developing States (UN OHRLLS) and United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)

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## KEY MESSAGES

### Status of LDCs, LLDCs and SIDS and progress towards achieving SDG 7

- LDCs, LLDCs and SIDS consist of 91 countries with a total population of about 1.1 billion. Access to energy in these vulnerable countries remains a major challenge.
- About half of the people in the world without electricity live in LDCs. In 2016, the proportion of the population in LDCs with access to electricity was 44.8 per cent. In LLDCs it was 53.1 per cent, and SIDS it was 76.3 per cent. This data hides disparities between countries and regions, as well as urban and rural areas, and some countries are trailing way behind, with an access rate as low as 7.6 per cent.
- Ending energy poverty in vulnerable countries and ensuring that no country or person is left behind has to become a priority for all stakeholders in order to achieve the 2030 Agenda.
- Each country's transition to a sustainable energy sector involves a unique mix of resource opportunities and challenges. National plans and policies should be designed for the particular needs and resources of each country, with a mix of grid, mini-grid and off-grid solutions.
- All vulnerable countries face inefficiencies in power utilities, which impact their operations and financial viability, and deter the private investments needed to improve generating capacity, and transmission and distributions systems.

### Priority actions

- To achieve the global goals on energy in LDCs, LLDCs and SIDS it will be essential to act fast to create enabling environments for private sector investment and to promote attractive project pipelines. This will require well-functioning institutions, and policy and regulatory reforms to help build credibility with investors and effectively scale up private investment, leveraging public resources for country-level implementation.
- Development Finance Institutions (DFIs) and development partners should increase the funding allocated to sustainable energy in LDCs, LLDCs and SIDS as this will have an impact across different sectors, including most of the SDGs, accelerating poverty eradication, structural transformation, and reducing vulnerability to fluctuating global energy prices.
- Moving a project from initial plan to bankable project requires significant time and human and capital resources (to prepare feasibility studies, environmental impact assessments, and permits). Vulnerable countries need more targeted support from their partners for project preparation to fast-track progress.
- Enhance integration of regional/cross border energy infrastructure and institutions to ensure economies of scale and lower the unit cost of energy generation.
- Create cross-sectoral linkages between sustainable energy and other development priorities (e.g., clean water, gender equality, improved education, access to healthcare, and climate change) to engage multi-stakeholder partnerships to support an energy transition, and to increase development finance flows that have the potential for higher impact and harmonized planning.
- Lack of maturity in energy access markets and underdeveloped financial markets in vulnerable countries mean that DFIs will have to play larger role in catalysing energy access investment in vulnerable countries.
- Ensure that the national energy policies take into consideration the energy demand profile of the poorest people, and ensure access to affordable energy. The positive development impacts of sustainable energy can be broadest by targeting the poorest people, who would normally not benefit from modern energy. The focus should not only be on promoting minimum access to households,

but also on productive uses and economic development, with a gradual shift towards self-sustaining systems promoting economic development that is transformative and inclusive. These two different types of end-use demand are mutually supportive.

## Vulnerable Countries and the Sustainable Development Goals

### Electricity access and achieving SDG 7 in vulnerable countries

Sustainable energy,<sup>1</sup> encompassing its three dimensions of access, efficiency, and renewable energy, is a key development enabler for many SDGs. Despite the potential that sustainable energy has for development, many vulnerable countries, including the least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS), still face daunting challenges in achieving SDG 7.

Together the LDCs, LLDCs and SIDS consist of 91 countries with a total population of about 1.1 billion. Access to energy remains a major challenge for them. In 2016, the proportion of population with access to electricity in LDCs was 44.8 per cent; in LLDCs it was 53.1 per cent, and in SIDS it was 76.3 per cent. However, this data hides huge disparities between countries; some trail way behind with an access rate as low as 7.6 per cent. It is also important to stress that the portion of the population without electricity overlaps with the portion in acute poverty, as they are not able to utilize the benefits of modern energy to improve their health, education, income generation and overall social and economic development. Furthermore, there are wide disparities between urban and rural areas, with urban areas having access rates that are substantially higher than the rural areas.

The three groups of countries, LDCs, LLDCs and SIDS, all face a different set of energy challenges, and the progress achieved so far depends on which pillar—access, efficiency or renewables—is being measured. However, none of the vulnerable countries can afford to focus on only one of the pillars; all three areas must be pursued at once to achieve accelerated energy transition.

This policy brief will identify how vulnerable countries are progressing towards achieving SDG 7 and what is needed to accelerate their energy transition.

<sup>1</sup> The term sustainable energy in this policy brief encompasses access to three forms of energy, each of which provides distinct but essential benefits for economic and social development: less polluting household energy for cooking and heating, including from improved cookstoves with traditional solid biomass fuels, from liquid and gaseous fuels such as kerosene and LPG, or energy from renewable energy sources such as solar; electricity for powering appliances and lights in households and public facilities such as health clinics, schools, and government offices; and mechanical power from either electricity or other energy sources that improve the productivity of labour.

### Current energy access status and main challenges in LDCs, LLDCs and SIDS

The 47 least developed countries (LDCs) represent the poorest and weakest segment of the international community and thus are the battleground on which the 2030 Agenda will be won or lost. The LDCs have a long way to go to achieve universal access to modern energy by 2030. While the average global electrification rate reached 87.4 per cent in 2016, the average access to electricity across LDCs hovered as low as 44.8 per cent, and 540.9 million of the world's 1 billion people without electricity live in LDCs. There has been progress in LDCs in recent years, but while access to electricity increased faster between 2000 and 2016 than in the previous decade, the expansion rate is still far from what is needed to achieve universal energy access by 2030. Expanding access has been hindered by high connection costs, unreliable or unavailable grid electricity, low population density (especially in rural areas), high leakage rates, high operational costs that pose challenges for utilities and consumers ability to pay, low demand from productive users, and lack of investment.

The electricity access situation in the LDCs also varies by region. In 2016, the Asia Pacific LDCs reached an average electrification rate of 73.6 per cent, while the rate in African LDCs was much lower at 30 per cent (as shown in the figure 23.1). Among the Asia Pacific LDCs, expansion of electrification and deployment of renewable energy systems in Bhutan, Tuvalu, Afghanistan, Cambodia, Nepal, and Lao People's Democratic Republic have led to notable expansion of access. In some LDCs where significant gains have been made, government engagement and buy-in have been driving forces.

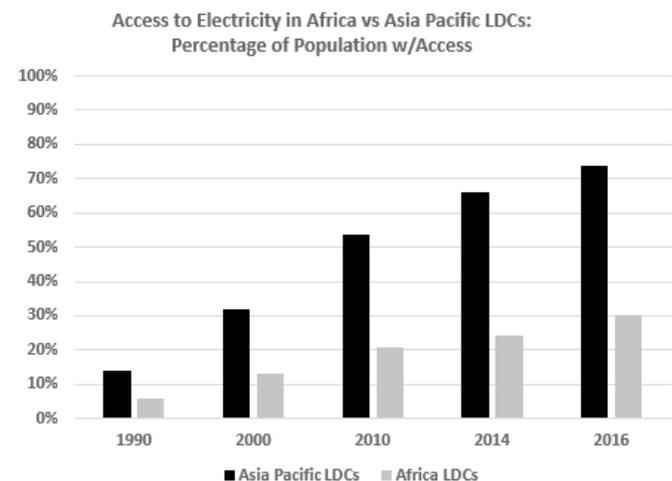


Figure 23.1

### Access to Electricity in Africa v. Asia LDCs: Percentage of Population w/Access

Within the LDCs, access to electricity tends to be far greater in

urban areas than in rural areas. In 2016, on average, 75 per cent of the urban population had electricity access, compared with only 31 per cent of rural populations, and access is expanding only slightly faster in rural areas. With a significant portion (68 per cent) of the LDC population living in rural areas and a steep urban-rural electrification gap, closing this gap in LDCs will require a higher level of investment in infrastructure, including a combination of off-grid / mini-grid and decentralized grid-connected solutions to reach more remote populations. The gap between urban and rural populations is more extreme in African LDCs, where 64.6 per cent of urban populations but only 14.4 per cent of rural populations have electricity, than in Asia Pacific LDCs, where 94.2 per cent of urban and 63.9 per cent of rural populations had access to electricity by 2016.

The 32 **landlocked developing countries (LLDCs)**, with a total population of 478 million, face development challenges related to their geographical disadvantages: lack of direct territorial access to the sea, and remoteness and isolation from world markets. Investment in energy infrastructure, along with information and communications technology, underpins the ability of LLDCs to structurally transform their economies, and therefore is a key priority for all landlocked developing countries. While the average proportion of population with access to electricity rose from 33 per cent in 2000 to 53.1 per cent in 2016, wide disparities between urban and rural areas exist in LLDCs. Furthermore, at least two-thirds of the population relies on biomass for cooking, underscoring the urgent need for improved access to clean and modern cooking energy.

**Small island developing states (SIDS)** face additional geographic barriers to economic as well as sustainable energy development. SIDS generally rely heavily on imported fossil fuels for both transport and electricity generation, while their remoteness poses logistical and financial challenges to trade. This reliance makes them highly vulnerable to fluctuations in global oil prices and increases their cost of doing business. Most SIDS rely on widespread use of oil-based generators for electricity, but with small, dispersed populations, the grid does not reach the majority of inhabitants in many islands. At the same time, SIDS have the potential to access several renewable energy sources, such as solar, wind, geothermal and tidal power. Hence, SIDS have the prospects to be forerunners in switching to renewable energy by adopting national renewable energy strategies, building the enabling environment, scaling up existing initiatives, establishing new partnerships, adopting new technologies and gaining better access to financing.

With respect to sustainable energy, across LDCs the share of traditional and modern renewables in total final energy consumption (TFEC) was 67.8 per cent, which is significantly higher than the global average of 17.5 per cent in 2015. However, this is largely due

to the use of traditional biomass, which has negative health, gender, and environmental consequences. In terms of renewable energy use, the average proportion of renewable energy in the total final energy consumption is 53 per cent for the LLDCs. In seven of these countries the proportion of renewable energy in final consumption is very small, accounting for less than 10 per cent, which shows that there is still great potential to promote greater use of renewable energy sources.

Improving energy efficiency is also a priority for all vulnerable countries, and most of them have only experienced small improvements. One crucial factor in increasing energy efficiency is the improvement of transmission and distribution systems. Improving energy intensity in these countries would make them more attractive for private sector activity, but greater private sector involvement and technological innovation is a necessity for driving such improvements.

In addition, all vulnerable countries face serious operational inefficiencies of power utilities, which need to be addressed as they impact significantly on the financial viability of these utilities. These inefficiencies reduce expected cash flows and deter private funding from going to power generation and distribution.

### **Leaving no one behind—are we on track to achieving SDG 7 in vulnerable countries?**

Achieving universal access to modern energy globally is critically dependent on achieving it in vulnerable countries. But for most of them, achieving SDG 7 by 2030 will be an enormous challenge. Despite progress in recent years, only four of the 47 LDCs could achieve universal access to electricity by 2030 without an acceleration of the rate of increase in access, while only seven more could do so even if they doubled their current rate of progress. In nearly a quarter of the LDCs, by contrast, achieving universal access by 2030 would require the number of persons gaining access annually to be 10 times higher in the coming years than over the past decade.

The vulnerable countries with the least resources often also pay a considerably higher price for each kWh. The average electricity rate in across LDC capitals is at US 22.4¢/kWh, compared to the rates of developed countries such as the United States (10.08¢/kWh, commercial 2016). Electricity rates in LDC countries range from US 5.7¢/kWh (Bhutan) to US 96¢/kWh (Solomon Islands). The significant variation is partly due to the energy mix, with countries highly dependent on imported fossil fuels having the highest rates.

Despite the vast challenges ahead, significant progress has been made in many countries. Vulnerable countries are increasingly incorporating access to reliable, affordable and renewable energy into their national development strategies and are making

continuous efforts towards implementing their plans. Many success stories exist already, including the examples discussed below.

Many SIDS are emerging as frontrunners in the pursuit of renewables-based energy systems. Several SIDS have included in their national plans ambitious targets on increasing the share of renewable energy in their power mix. Samoa, for example, set a target of achieving 100 per cent renewable energy by 2025 in its Nationally Determined Contributions under the Paris Agreement. To contribute to this target, Samoa recently signed a project on Improving the Performance and Reliability of RE Power Systems, which was funded through the Global Environment Facility (GEF) with US\$ 6 million and US\$ 46million co-financing by the Government of Samoa.

In Burkina Faso, the government aims to meet 100 per cent of electricity needs in urban areas and 40 per cent in rural areas with reliable and affordable electricity by 2025. Significant efforts are under way to achieve this, and the largest solar power plant in West Africa was inaugurated in Burkina Faso in 2017. This 33 MW power plant, located in Zagtoui, has 129,600 solar panels on a surface of 60 hectares.

Bangladesh has made considerable progress in electricity access in recent years. The major sources of renewable energy in Bangladesh are solar and wind energy. The innovative financing model for Solar Home Systems has led to rapid expansion of their use and over 4.5 million Solar Home Systems have been installed. The energy output from solar increased from 51 to 212 GWh between 2010 and 2014. The coastal areas in Bangladesh also provide good opportunities for wind-powered pumping and electricity generation.

The Economic Community of West African States (ECOWAS) has demonstrated the added value of sub-regional cooperation, by creating the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) and implementing a comprehensive sub-regional policy process which resulted in the adoption of regional renewable energy, energy efficiency and energy access targets by 2030. Under the coordination of ECREEE, all member states developed national action plans on renewable energy, energy efficiency and energy access. In the partnership with DFIs and investors, sustainable energy investment prospectuses were developed. ECREEE has become an important vehicle for ensuring equal and accelerated progress (nobody is left behind), as well as harmonization of donor activities. Currently, other regions have also started advancing similar sub-regional initiatives.

These success stories are clear signs that achieving rapid progress in the energy sector is possible. The historic Paris Agreement on climate change, has shaped recent year's developments, which together with the price decreases in renewable energy and new technical innovations, have paved the way for a brighter future.

With strong national leadership, multi-stakeholder partnerships and increased access to finance, vulnerable countries will be able to accelerate their progress in providing access to modern energy.

However, considering the long up-front times of energy investments and the current pace, it is uncertain whether SDG 7 can be attained by 2030 in many vulnerable countries. The uptake of sustainable energy investments continues to be hindered by a broad range of interrelated barriers (e.g., policy, technical, financial, institutional, capacity, knowledge, awareness).

Moreover, in many LDCs, LLDCs and SIDS the inability of the private sector to supply quality sustainable energy products and services at competitive prices has become a major bottleneck. Often the domestic manufacturing and services sectors are weakly developed and market demand remains underserved by international suppliers and supply chains due to high market entry costs and risks. This situation has led to a mismatch between the increasing demands for specialized services and equipment on the one hand and the limited capacities of the domestic sector to meet them. Despite enabling policies and targets this leads in some cases to a stagnating market, where sustainable energy investment is only ad-hoc or without the perspective of scaling-up. The lack of viable business, operation and maintenance models calls into question the long-term sustainability of decentralized renewable energy projects in various developing countries (e.g., mini-grids in SIDS or Sub-Saharan Africa).

### **How to accelerate energy transition in vulnerable countries and policy recommendations**

Sustainable growth, advancing development, and improving livelihoods can only be achieved with efficient use and distribution of modern energy. Access to, and dissemination of, affordable, reliable, and renewable energy and related technologies should be made a priority; this will be critically important on the path towards sustainable development and ending extreme poverty. Each country's transition to a sustainable energy sector involves a unique mix of resource opportunities and challenges, and national plans and policies should be designed for the unique needs and resources of each country with the necessary mix of grid, mini-grid and off-grid solutions.

To accelerate the energy transition, LDCs, LLDCs and SIDS and their development partners need to focus on: 1) creating and enforcing predictable and coherent demand and supply oriented policies and regulatory frameworks, 2) unlocking investment in the energy sector, including through tailored de-risking and financial instruments, 3) addressing currently limited funds and human capacity in policy development and the project planning stage, 4) improving technology transfer and strengthening domestic R&D on adapted solutions, 5) enhancing regional cooperation, 6) engaging

and building multi-stakeholder partnerships to support the energy transition, and 7) considering options for building energy systems catering to the demands of the “bottom of the pyramid”.

To accelerate progress, a holistic approach, which addresses all the above mentioned issues simultaneously, is needed. This will require multi-stakeholder partnerships involving many different stakeholders with individual comparative advantages. A **national plan for energy transition** that brings together DFIs, bilateral donors, the private sector and national stakeholders, and aligns energy sector budget allocations to support energy access investments is needed.

It is equally important to enact **regulatory reforms** that are consistent and predictable for DFIs and the private sector to adhere to, thereby boosting investor confidence and unlocking financial flows. A national investment prospectus can also support countries in making rapid progress, through: identification of gaps; clear, ambitious and realistic goals; risk assessment and management; prioritization of actions; and communication/sharing of information with the general public on the investment prospectus. It is also important to create **cross-sectoral linkages between sustainable energy and other development priorities** (e.g., clean water, gender equality, improved education, access to health care, and climate change) to increase development finance flows that have the potential for higher impact and harmonized planning. In particular, policymakers should aim to establish the energy-transformation nexus, creating a virtuous circle between energy and structural transformation.

Additional sources of financing and tailored programmes for vulnerable countries are key for accelerating progress. It is the responsibility of LDC, LLDC and SIDS governments to take necessary actions to shift funding priorities and design enabling policies to promote investments in the energy sector. Similarly, DFIs, development partners and the private sector will have to play a large role in providing the capital, mitigating risk, and building the market for high quality and affordable energy products. These actors can play a role in unlocking investment in vulnerable countries. However, the lack of maturity in energy access markets and underdeveloped financial markets mean that **public finance institutions will have to play larger role in catalysing energy access investment in vulnerable countries**.

One of the main constraints for vulnerable countries in accessing funds is **weak project preparation, implementation and monitoring capacities**. Financial and human resources required for building robust project pipelines are considerable, from enhancing project preparation capacities to defining the roles of the public and private sectors and deploying financing models that encourage blended finance. A sustainable business model needs to take into account ownership structure, communities, understanding of requirements

for funding, capacity, technology, financial models, environmental and market analysis, etc. Many project developers in LDCs, LLDCs and SIDS find that having the technical capacity and/or connections is not sufficient to develop a bankable, financially viable project. The shortage of funds to undertake this critical preparation work further hampers the preparation of bankable project concepts in these countries. **Vulnerable countries will need further support in preparing bankable projects**, and development partners should provide targeted support in this area.

Many LDCs, LLDCs and SIDS that have made impressive strides in their energy access have had a **strong local institution or so-called “local champion”** to work in tandem with DFIs and take the lead in the development and implementation of the national energy plan and subsequent programmes with a clear, transparent and well-managed approach. One good example is the Alternative Energy Promotion Centre in Nepal.

To make the shift towards sustainable energy and climate technologies sustainable and a win-win situation for vulnerable countries, there is a need to **strengthen technology transfer and the absorption and innovation capacities of the domestic private sector**. Apart from demand-creating support, a strong emphasis on supply side is needed (e.g., incubation services, tailored grant and loan financing for entrepreneurs, R&D on adapted technologies, cluster building, innovation networks linking industry with applied research, and South-South and North-South business partnerships).

To reach economies of scale, there is a need to strengthen **sub-regional cooperation and capacities in the sustainable energy sector**. Some of the barriers (e.g., capacity-building, policy, knowledge and data, infrastructure building, investment and business promotion) can be addressed more effectively (and cost-effectively) through regional or sub-regional exchanges, methodologies and tools. In this context, regional sustainable energy centres, owned by the regional economic communities, can play an important role in setting priorities, coordinating complex policy implementation processes, and creating synergies between country and donor activities. Such centres can complement and support the activities of DFIs, regional power pools and regulatory authorities.

A greater effort is needed to strengthen **synergies between access, energy efficiency and renewable energy**. A fragmented approach to the three SDG 7 targets is an obstacle to building linkages to other key SDGs such as health, food, water, gender and productive and community uses. A well-performing and efficient energy system strengthens the opportunity to provide energy access to those now deprived of affordable and reliable energy. Provision of modern energy access, including electricity and clean cooking fuels, will also: develop productive capacities and accelerate economic growth; provide better health outcomes through reductions in

both indoor and outdoor air pollution, and greater provision and access to quality health services; raise education standards; and help mitigate the impacts of climate change. In fact, there are very few areas in the sustainable development agenda where sustainable energy will not play a significant role.

Going forward, national energy policies need to take into consideration the **energy demand profile of the poorest people** and ensure their access to affordable energy. The positive development impacts of sustainable energy can be expanded the most by targeting the poorest people, the so-called “bottom of the pyramid”, who usually do not benefit from modern energy. Bottom-up planning will enable a realistic understanding of the technologies needed and the scales on which they are required. This will allow bringing the right financing tools to best address the challenges and needs of the poorest people. The distributed generation solutions often require smaller project portfolios and may require different sets of aggregation tools and early-risk capital.

At the same time, the focus should not be on just promoting minimum access for households, but also on transformational energy access, which supports productive uses, structural transformation and economic development, through a gradual shift towards self-sustaining systems **promoting economic development that is transformative and inclusive.**

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